

What is claimed is:

- 1 1. A particulate-matter-delivery system comprising:
 - 2 a feeder having a feeder inlet and a feeder outlet, the feeder outlet being configured to
 - 3 expel particulate matter at a predefined rate;
 - 4 an auger having an auger rotational axis, the auger being located within the feeder,
 - 5 the auger being operatively coupled to the feeder outlet, the auger being configured to rotate
 - 6 about the auger rotational axis, the rotating of the auger resulting in expulsion of the
 - 7 particulate matter from the feeder outlet;
 - 8 an agitator having an agitator rotational axis, the agitator being located within the
 - 9 feeder;
 - 10 a controller configured to intermittently produce an electrical signal; and
 - 11 a motor coupled to the controller, the motor being configured to receive the electrical
 - 12 signal from the controller, the motor further being configured to activate in the presence of
 - 13 the electrical signal, the motor further being configured to deactivate in the absence of the
 - 14 electrical signal, the motor further being mechanically coupled to the agitator, the motor
 - 15 being configured to rotate the agitator about the agitator rotational axis when the motor is
 - 16 activated, the rotating of the agitator resulting in agitation of the particulate matter in the
 - 17 feeder.

1 2. The system of claim 1, further comprising:

2 a storage hopper for holding particulate matter, the storage hopper having a hopper
3 outlet, the hopper outlet being fluidly coupled to the feeder inlet, the hopper outlet being
4 configured to expel the particulate matter, the particulate matter being expelled into the
5 feeder inlet.

1 3. In particulate-matter-delivery systems that employ mechanical agitators, a
2 system comprising:

3 a mechanical agitator having a rotational axis;

4 a motor being mechanically coupled to the mechanical agitator, the motor further
5 being configured to rotate the mechanical agitator about the rotational axis;

6 a controller being electrically coupled to the motor, the controller being configured to
7 intermittently activate the motor, the intermittent activation of the motor resulting in the
8 rotation of the mechanical agitator about the rotational axis.

1 4. In particulate-matter-delivery systems that employ mechanical agitators, a
2 system comprising:

3 a mechanical agitator having a rotational axis;

4 a controller configured to intermittently produce an electrical signal; and

5 a motor interposed between the controller and the mechanical agitator, the motor
6 being configured to receive the electrical signal from the controller, the motor further being
7 configured to rotate the mechanical agitator about the rotational axis in response to receiving
8 the electrical signal from the controller.

1 5. The system of claim 4, wherein the controller comprises:
2 a phase-locked loop (PLL) circuit.

1 6. The system of claim 4, further comprising:
2 a meter for monitoring the delivery of the particulate matter from the system;
3 wherein the controller comprises logic adapted to deactivate the meter;
4 wherein the controller further comprises logic adapted to activate a mechanical
5 agitator, the mechanical agitator being activated in response to the meter being deactivated;
6 wherein the controller further comprises logic adapted to deactivate the mechanical
7 agitator; and
8 wherein the controller further comprises logic adapted to activate the meter, the meter
9 being activated in response to the mechanical agitator being deactivated.

1 7. The system of claim 4, wherein the controller comprises:
2 means for activating a mechanical agitator; and
3 means for deactivating the mechanical agitator.

1 8. In a particulate-matter-delivery system having a mechanical agitator, a method
2 comprising the steps of:
3 activating the mechanical agitator;
4 deactivating the mechanical agitator; and
5 recursively repeating the activating and deactivating steps.

1 9. The method of claim 8:

2 wherein the step of activating the mechanical agitator comprises the step of activating
3 the mechanical agitator during a first time interval; and

4 wherein the step of deactivating the mechanical agitator comprises the step of
5 deactivating the mechanical agitator during a second time interval, the second time interval
6 being greater than the first time interval.

1 10. The method of claim 9:

2 wherein the step of activating the mechanical agitator during the first time interval
3 comprises the step of activating the mechanical agitator for approximately ten (10) seconds;
4 and

5 wherein the step of deactivating the mechanical agitator during the second time
6 interval comprises the step of deactivating the mechanical agitator for approximately five (5)
7 minutes.

1 11. The method of claim 9:

2 wherein the step of activating the mechanical agitator during the first time interval
3 comprises the step of activating the mechanical agitator for less than approximately twenty
4 percent (20%) of a duty cycle; and

5 wherein the step of deactivating the mechanical agitator during the second time
6 interval comprises the step of deactivating the mechanical agitator for more than
7 approximately eighty percent (80%) of the duty cycle.

- 1 12. The method of claim 8, further comprising the steps of:
- 2 metering an output of the particulate-matter-delivery system when the mechanical
- 3 agitator is deactivated.